Strategy Research Project

ACHIEVING NUCLEAR DETERRENCE IN THE 21ST CENTURY

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USAWC CLASS OF 2011

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
18 March 2011	Strategy Research Project	

4. TITLE AND SUBTITLE

Achieving Nuclear Deterrence in the 21st Century

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Captain William J. Adams, Jr. USN

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

COL (Ret) Robert C. Coon
Department of Military Strategy, Planning, and Operations

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

U.S. Army War College
122 Forbes Avenue
Carlisle, PA 17013

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT

Distribution A: Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The project will examine how to achieve stable nuclear deterrence against both state and non-state actors in the 21st century. The elements of deterrence will be examined, and the application of these elements against both state and non-state actors will be examined. The rules of nuclear deterrence that operated during the Cold War will be examined to determine if the rules have changed, and if so, what the new rules are and how they influence rogue states, non-state actors, and traditional nuclear states.

15. SUBJECT TERMS

General Deterrence, Nuclear Deterrence, Terrorism

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** *(include area code)*
UNCLASSIFED	UNCLASSIFED	UNCLASSIFED	UNLIMITED	30	

USAWC STRATEGY RESEARCH PROJECT

ACHIEVING NUCLEAR DETERRENCE IN THE 21ST CENTURY

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This SRP is submitted in partial fulfillment of the requirements of the Master of Strategic Studies Degree. The U.S. Army War College is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools, 3624 Market Street, Philadelphia, PA 19104, (215) 662-5606. The Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation.

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ABSTRACT

AUTHOR: Captain William J. Adams, Jr.

TITLE: Achieving Nuclear Deterrence in the 21st Century

FORMAT: Strategy Research Project

DATE: 18 March 2010 WORD COUNT: 6,312 PAGES: 30

KEY TERMS: General Deterrence, Nuclear Deterrence, Terrorism

CLASSIFICATION: Unclassified

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ACHIEVING NUCLEAR DETERRENCE IN THE 21ST CENTURY

Transformational events in the life of a nation are, thankfully, rare. The United States experienced one such event on December 7, 1941, which brought the United States into World War II as the ally of the United Kingdom and the enemy of Germany and Japan. After the Japanese attack on Pearl Harbor, the foreign policy conversation in the United States changed overnight to a consensus for engagement in the world, a consensus which has endured to the present time.

A second transformational event occurred from 1989 to 1991, beginning with the fall of the Berlin Wall and culminating in the dissolution of the Soviet Union. Francis Fukuyama, in an article entitled "The End of History"[1], speculated that liberal democracy had won the war of political ideas and that nations henceforth would merely refine the procedures of liberal democracy and forswear other forms of government. To many, it seemed that at long last the nations of the earth would live together in fraternal amity and finally turn their efforts toward disestablishing poverty and disease.

If that all sounded too good to be true, it was too good to be true. While the Soviet Union did depart this vale of tears, Russia remained: the Soviet apparatus and its apparatchiks changed their organizational name tags, and emerged recently to remind us that evil still exists in Russia. Toxic regimes such as Saudi Arabia, North Korea, Iraq and Iran evaded the democratic wave of the future and continued to suppress and torture their citizens. Within the United States the urge to disarm resulted in a dramatic decrease in the funding and attention given to the nuclear weapons enterprise. With the death of the Soviet Union, there would be no threat of global nuclear war since no other nuclear power had the resources of the former Soviet Union,

and even today China possesses a relatively small nuclear arsenal. The nuclear sword of Damocles thus disappeared, and the United States and its allies rejoiced; the nuclear threat had declined significantly, if it had not altogether disappeared.

This joy was short lived. India had tested a nuclear bomb in 1974 but did no further development for twenty-four years. From May 11 to 13 in 1998 India tested five nuclear devices. Neighboring Pakistan immediately followed suit, and fifteen days later tested five nuclear weapons in a single day. One year later India and Pakistan nearly came to nuclear blows, and almost ended the tradition of non-use of nuclear weapons.

Then another transformative event occurred, and yet another calendar date entered the American vocabulary as a synonym for infamy. The attacks of September 11, 2001 were no less transformative than the attack on Pearl Harbor; the world changed dramatically and malignantly, and the American people awoke to a world in which history had returned with a vengeance. Radical members of the well-known but poorly understood religion of Islam forced Americans to observe a world which appeared to be hugely complex and shockingly unfriendly to the American enterprise. Furthermore, it was known that the radical Islamic group Al Qaeda was seeking weapons of mass destruction and openly stated its desire to use them to attack the United States. Another unpleasant surprise occurred in October 2006, when North Korea tested a nuclear weapon, although the yield was less than one kiloton and the test may have been a failure. And finally, the Islamic Republic of Iran seems poised to develop nuclear weapons within the next two to five years. The entire regime of nuclear deterrence that prevented – or seems to have prevented – nuclear war for the last sixty-five years appears to be in jeopardy. Had the rules of nuclear deterrence, which had

served the world – and the US – so well for so many decades changed? From a nuclear standpoint, the world in 2011 is a more dangerous place than at any time since May 1998. This also raises the question whether religious principle is more important than political power for radical non-state groups.

At this point it is necessary to review the history of military deterrence and the nuclear deterrence theories of the nuclear age.

When the United States attacked Japan with atomic bombs on August 6 and August 9, 1945, it was widely believed that a new era of warfare had begun. Six days after Nagasaki was bombed, on August 15, 1945, Japan surrendered; the rapid surrender gave rise to the American narrative explaining that victory was obtained by the atomic bombings. The atomic bomb was viewed as a weapon so devastating that it could end a war, and so frightening that it might even prevent future wars. During the late 1940s the United States enjoyed a monopoly of nuclear power yet demonstrated prudence and restraint. The atomic bomb was not used against the Soviet Union despite several provocations, such as the Communist overthrow of the Czechoslovakian government and the blockade of Berlin. In August 1949 the Soviet Union tested its first atomic bomb and America lost its monopoly; less than a year later in June 1950 North Korea invaded South Korea, and American leadership debated using nuclear weapons in Korea but finally rejected their use. Further development continued and on November 1, 1952 the United States tested the first hydrogen bomb, with a yield approximately 5,000 times greater than the Hiroshima or Nagasaki weapons. Thus, within five years of the atomic bombings of Japan, the fear of atomic bombs failed to prevent North Korea from invading South Korea, failed to prevent China from entering the war in support of

North Korea and failed to prevent the Soviet Union from overthrowing Czechoslovakia, blockading Berlin, or attempting to destabilize Greece. However fearsome nuclear weapons looked to American and western eyes, they did not seem to frighten the Soviet Union or Communist China.

When Japan surrendered quickly after the two atomic bombings, groups within Japan and the United States were quick to claim the victory for the atomic bombs rather than the Soviet declaration of war against Japan at 11:00 pm on August 8, hours before the Nagasaki bombing. Attributing the surrender to the overwhelming technical superiority of the atomic bomb was a way for Japan to save face; attributing the surrender to the atomic attacks allowed the United States to justify the expense of the Manhattan Project and warn the Soviet Union.

Since there have been no nuclear wars, and only one war in which only two nuclear weapons were used, there are no experts in nuclear war or nuclear strategy. There are, however, many specialists in nuclear war strategy, people who have studied nuclear warfare as a conceptual entity with only two empirical data points[2]. There is empirical data on nuclear deterrence: there have been no nuclear attacks for sixty-five years, a happy fact which does provide an adequate period of time to study the phenomenon of nuclear deterrence. What is not available is logically compelling proof that “nuclear deterrence” as practiced actually prevented nuclear war. Although logic does not permit proof of why an event does not occur, informed speculation is possible. To determine whether deterrence is achievable in the volatile, uncertain, complex and ambiguous environment of the 21st Century, the nature and history of deterrence must be examined.

What is Deterrence?

The central idea in nuclear deterrence is the concept of deterrence, defined in Joint Publication 1-02 as “the prevention from action by fear of the consequences. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction.”[3] The same publication defines deterrent options as “a course of action, developed on the best economic, diplomatic, political and military judgment, designed to dissuade an adversary from a current course of action or contemplated operations.”[4]

Deterrence is an ancient concept in warfare; recorded history is replete with states building armies and navies, forming alliances and coalitions, and making threats in order to deter another state. Indeed, one can argue that deterrence is psychologically irrefutable. Thucydides’ *The Peloponnesian War* describes clearly that fear is often the principal motive of states,[5] and fear is the essence of deterrence. It is historically unknowable how many wars have been averted by effective deterrence, but history is littered with wars, great and small. Examples exist of policies which were intended to deter but were unsuccessful, such as the movement of the American Pacific Fleet from San Diego to Pearl Harbor in 1941 to deter Japan from expanding into Southeast Asia.[6] It can be argued that the main reason to possess military force is to deter potential enemies from attacking a state or its interests.[7] Until the advent of nuclear weapons, deterrence was a policy that bought time more than success, as it was often a policy on the route to war since conventional war was much less destructive than nuclear war and rarely could be termed existential. Pre-nuclear age deterrence was thus a diplomatic tool rather than a military one.[8] Harkabi defines deterrence as “the inducement of another party (hereafter referred to as the “deterred”) to refrain from a certain action by

means of a threat that this action will lead the threatened (the deterrer) to inflict retaliation or punishment."[9] Deterrence is the most important concept in nuclear strategy, which during the Cold War consisted almost solely of nuclear deterrence. Understanding general deterrence is thus the key to understanding whether the nuclear deterrence subset remains relevant.

Deterrence is a relationship between two parties, and is at its root a psychological relationship. The deterrent threat must be known, which is to say that it must be communicated openly; there is no deterrence by default. The threat must be credible: the deterred must believe that the deterrer will actually perform the threat. In addition, deterrence uses a loss/benefit calculation to be effective; the deterred must calculate that the loss from the threat outweighs the benefit from the action that is being deterred. Whether a threat is considered credible is complex; the deterrer must be able to perform the threat by possessing the necessary weapons and delivery system. The weapon and delivery system must be survivable, so the threat can be performed even if the deterred party launches a pre-emptive strike to remove the threat. In nuclear terms, a credible deterrent is a survivable second strike capability.[10]

To be credible, a deterrer must also have the intent to respond. If it is not certain that the deterrer will respond, the deterred party may not be deterred. Determining how committed the deterrer is can be difficult, but it is in the interest of the deterring party to make its intentions clear. Since the deterrence regime is a form of game, the rules must be clear or one of the parties may not grasp the importance of the threatened action. Classical deterrence has always made use of judging the capability and intention of an adversary, although with nuclear weapons an order of battle calculation is not as useful

as for conventional weapons, since nuclear weapons are so destructive that even a few nuclear weapons may inflict unacceptable levels of damage.[11]

Deterrence of the general kind has been studied in less detail and with less academic rigor than nuclear deterrence. One study examined deterrence over the last twenty-five hundred years using a socio-historical model complete with equations and statistical analysis to identify correlations. Wars from Asia as well as Europe were analyzed, from the Punic Wars of Rome and Carthage to the American Revolution. The conclusions were depressing; of the twenty-plus factors studied, none correlated with peace in any statistically significant fashion, and "they tell us that…the search for peace and security through armed force is in vain."[12] Mearsheimer studied conventional deterrence after noting that belief in the efficacy of nuclear deterrence in the Europe of the early 1980s seemed to be waning, and that conventional deterrence was becoming more important in the counsels of NATO. He concluded that in a crisis involving a nation with the capability of executing a successful blitzkrieg, deterrence was likely to fail.[13] Another study proposed a research design for a systematic study of general deterrence using three theoretical frameworks: rational deterrence, rational conflict initiation, and a cognitive behavior model emphasizing risk orientation and misperception. This study showed that while all three models were useful, each alone was not able to identify factors that lead to successful general deterrence.[14]

Colin Gray has written extensively and persuasively about both general and nuclear deterrence. In a 2002 paper he stated that deterrence is by definition a relational variable that requires the active cooperation of the deterred even if it is coerced, and goes on to state that successful deterrence is less about building bigger

arsenals and more about detailed understanding of the culture and decision making process of the party to be deterred.[15] A 2003 monograph treats the topic of effective deterrence in detail, and in it he opines that deterrence, i.e. general deterrence, has been and will continue to be an essential component of U.S. Grand Strategy, and that land power is as important as nuclear weapons, air power or sea power in creating that deterrence.[16] In this paper he also discusses deterrence, compellance, dissuasion, and inducement as variations on the theme of changing an adversary's response to threats of force, and describes preemption and prevention as alternative methods to deterrence. His analysis is broad in scope, and addresses five well-known problems with deterrence:[17]

- Deterrence is not reliable
- The modern theory and practice of deterrence is theoretically weak
- American deterrence theory confuses rationality with reasonableness
- Many new enemies may not be deterrable
- Friction will prevent our efforts to deter

He concludes with a discussion of measures that can maintain deterrence, both general measures such as showing that historically terrorism always fails, and military measures, such as land power is essential, but no particular military capability is uniquely deterring. Another theme in this paper is the lack of an empirical basis for deterrence theory; Gray states that deterrence is always specific, that is it is always about deterring a specific leader or leaders, at a specific point in time, from performing a specific action.[18] Lawrence Freedman expanded on Gray's ideas in a book titled simply *Deterrence*; in it Freedman discusses deterrence not only as a military technique but

also as a social and judicial technique in law enforcement. He makes several arresting observations, such as military signals are notoriously ambiguous, and that theories that depend on the intelligence and rationality of another are not prudent.[19] He concludes that deterrence of all kinds is still useful and relevant, and that even terrorist groups such as Al Qaeda are deterrable using deterrence by denial strategy, that is, exerting deterrence by denying the group success. Deterrence by denial can occur if a community hardens itself against terrorist attacks, minimizing the effects of terrorist attacks, and not allowing politically significant consequences as a result of terrorist attacks.[20]

More recently, Gray revisited deterrence theory reminding the reader that deterrence only occurs when someone decides that he is deterred, and unless the deterred agrees and cooperates, deterrence doesn't work. He re-states the basic components of deterrence: first, a threat to something the deterred values highly; second, the ability to execute the threat, but more precisely, having the deterred believe that the capability exists; third, threats must be perceived and understood by the deterred, that is he must have the knowledge that should deter him. Friction can prevent the deterred from understanding the threat, and the internal political situation of the deterred may prevent him from being deterred. Gray concludes that the feasibility of deterrence is case specific, is more complex than it was with the US/Soviet Union relationship, and is perhaps often not even possible. But if deterrence fails, the US will be able to defeat current and future enemies for some time by brute force.[21]

This leads to the disconcerting conclusion that there is little historical evidence that deterrence prevents wars. Jeffrey Record sums it up nicely: "The success of

deterrence is measured by events that do not happen, and one cannot conclusively demonstrate that an enemy refrained from this or that action because of the implicit or explicit threat of unacceptable retaliation."[22] Deterrence has been resistant to logical analysis, and must therefore be considered a matter not of knowledge but of belief. Deterrence may be similar to religious belief; if it really exists and operates, it is a very complex and ambiguous process. Deterrence is not a science and does not obey scientific rules; it is relational and individual, and results from one-on-one relationships between the deterrer and the deterred parties. Any power that wishes to use deterrence must acknowledge that what will deter one party may not deter another party, and that what deters one party may change with time and circumstance.

What is Nuclear Deterrence?

Nuclear Deterrence is a subset of general deterrence, but with one enormous difference: the destructive power of nuclear weapons conveys the threat of existential destruction to an opponent. The obvious power of atomic weapons quickly led to a new understanding of warfare. In 1946, just one year after the atomic bombings and the conclusion of World War 2, Bernard Brodie became the Moses of nuclear deterrence with the publication of *The Absolute Weapon: Atomic Power and World Order*.[23] Coming so quickly after the conclusion of the war and the beginning of the Nuclear Age, Brodie was eerily prescient; the book contained the now-famous quote: "Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other purpose." While he can be excused for not predicting the Korean War, Vietnam War, Cold War, or the First and

Second Gulf Wars, there is great merit is his idea that in an atomic age, deterring an atomic war is the only conceivable purpose of atomic forces.

If Brodie was the Moses of the American Atomic Age, there were many prophets who expanded on what Brodie first said. Prominent among them were Henry Kissinger, Herman Kahn, Albert Wohlstetter and Thomas Schelling, although this list could be expanded greatly. Henry Kissinger was a professor at Harvard in 1957 when his book *Nuclear Weapons and Foreign Policy* elevated him into the Pantheon of American foreign policy; he argued that that threatening nuclear annihilation was useless as an instrument of policy because it was not believable.[24] Kahn, a physicist at the RAND Corporation, developed a comprehensive theory for calculating nuclear outcomes, and demonstrated that a nuclear war was theoretically winnable, and that nuclear escalation could be controlled in a discriminating manner.[25], [26] His taxonomy of nuclear deterrence published in 1960 is required reading at the US Army War College; he defines Type 1 deterrence as that of deterring against direct attack automatically, Type 2 deterrence as the use of strategic threats to deter an enemy from engaging in acts that are provocative but less than a direct attack, and Type 3 deterrence as acts that are deterred by the threat of limited responses, in a sense being tit-for-tat deterrence.[27] Schelling argued that nuclear weapons could exert a deterrent effect even after their first use, because their capability to hurt would cause further use to be deterred; he also believed that nuclear deterrence was a function of fear of the unknown rather than fear of specific theoretically quantifiable threats by a specific enemy.[28]

Many authors find nuclear deterrence theory unconvincing. Philosopher Philip Green in 1966 examined the major nuclear theorists and criticized their work as

methodologically weak and logically unpersuasive.[29] Joseph Nye examined the morality of nuclear war in 1986, and reminded readers that self-defense is a just-but-limited cause, and that the nature of nuclear weapons is such that reliance on them must be reduced, if not eliminated.[30]

The first twenty years of theorizing about nuclear war have been referred to as the First Two Generations of Nuclear Strategy; strategists in this period struggled with relating the catastrophic nature of nuclear damage to useful political goals. It became clear early that nuclear strategy would be the study of the non-use of the weapons, Kahn's theories notwithstanding. The debate was global: France, the United Kingdom, the Soviet Union, and China all engaged in strenuous political debates to determine the proper nuclear strategy for their particular needs.[31] The evidence for the effectiveness of aerial bombing from World War 2 was far from clear, but one finding did stand out: the Airpower theorists had been wrong, at least about non-nuclear bombing. Civilian populations proved to be far more resilient than expected, especially in Japan and Germany. The Soviet Union was unimpressed by strategic bombing, as shown by the inability of the United States to control Soviet behavior during the period of American nuclear monopoly. The Korean War led the Eisenhower administration to perceive that the only long-term role of nuclear weapons was to deter their use by an enemy. The policy confusion resulted in the inaptly termed policy of "massive retaliation" announced by Secretary of State John Foster Dulles in January 1954, which failed to address how America would respond to a modest Soviet challenge.[32] The development of small nuclear weapons was a technological response, but by the mid-1950s the US had to create a credible conventional force or find itself unable to respond to a military

challenge except with nuclear weapons.[33] In 1964, Secretary of Defense Robert McNamara devised the policy for the Johnson Administration known by its ironic acronym: MAD, for Mutual Assured Destruction. This attempted to deter a deliberate nuclear attack on the US or its allies by maintaining a clear and demonstrable ability to inflict unacceptable damage on an aggressor even after absorbing a surprise first attack.[34] But MAD was quickly determined to be politically bankrupt, since the policy dilemma of the mid-1960s was a conventional Soviet attack in Europe which could not be prevented without nuclear weapons, even as the Soviet nuclear counter-threat made that response non-credible.

The first twenty years of the nuclear age passed without nuclear war, despite the near-miss of the Cuban Missile Crisis in October 1962. During this time, nuclear deterrence relied on the threat of overwhelming punishment rather than denial; in addition, some stability had developed between the United States and the Soviet Union as both nations understood that nuclear weapons were unlike other weapons, and that a war between the USA and USSR would result in catastrophe for both and victory for neither.[35] This first nuclear age ended with five nuclear powers: the US, Soviet Union, United Kingdom, France and China. It also ended with a global consensus that a nonproliferation mechanism was necessary or there could be a large increase in the number of nuclear-armed states. The second nuclear age, per Levite, spanned the years 1968 to 1992 and was characterized by creating and managing nuclear stability. The great achievement of this age is the Non-Proliferation Treaty (NPT) of 1968, which went into effect in 1970.[36] Levite's third nuclear age ran from 1993 to 2010, and was characterized by complacency and disillusionment. While many positive actions

occurred, such as the Comprehensive Test Ban Treaty and the various START treaties between the US and the USSR, and especially the indefinite extension of the NPT in 1995, other dangerous trends emerged. India, Pakistan, Israel and North Korea became nuclear-armed powers, while Iran has been working feverishly to become one. The A. Q. Khan network demonstrated that the non-proliferation regime could be evaded, and currently the international mood is pessimism with the world on the brink of widespread nuclear proliferation.[37] Levite suggests that the emergence of a nuclear-armed Iran along with the failure of the Pakistani state could result in a fourth nuclear age, characterized by widespread proliferation and an increased risk of nuclear war.

The literary conceit of four nuclear ages attracted attention. Jeffrey Knopf uses a similar approach to describe waves of deterrence research and modeling.[38] Knopf states that the four ages of deterrence research are:

- An initial wave of theory addressing the invention of the atomic bomb
- A second wave in the 1950s and 1960s which used game theory and other analytical tools to create what became the conventional wisdom about deterrence
- A third wave starting in the late 1960s which used advanced statistical methods to test deterrence theory empirically
- A fourth wave that began after the collapse of the Soviet Union and addressing asymmetrical threats.[39]

In Knopf's view, the fourth age of deterrence research will have to solve the problem of deterring rogue nations such as North Korea and Iran, as well as non-state actors such as Al Qaeda. A further complication is that while the United States accepted

mutual deterrence during the Cold War, it is not willing to be deterred by Iran, North Korea or Al Qaeda. Deterrence in this fourth age will have to be tailored to fit each group or nation to be deterred; the one size fits all deterrence of the Cold War will not work.

Many writers believe that nuclear deterrence successfully deterred war between the United States and the Soviet Union, and that it can deter rogue states and even non-state actors from using nuclear weapons. Jeffrey Record, in a previously cited paper, argues that nuclear deterrence pre-911 was effective because it was directed at the use of nuclear weapons by states possessing them, and did not attempt to prevent states from acquiring them. He remarks that possession of a handful of primitive nuclear weapons "does not purchase, nor should it be allowed to purchase, immunity from thermonuclear Armageddon."[40] Van den Bergh argues that nuclear weapons forced the major powers to avoid war between them even as they fought proxy wars in the Third World. He concludes that nuclear weapons do not give their owners positive political results, and in a sense help produce order and stability.[41]

Some authors continue to believe that nuclear weapons are useful to deter not only nuclear attacks, but also attacks by chemical or biological weapons of mass destruction and even conventional attacks. Payne argues this point and also that while the efficacy of deterrence may not be proven scientifically, the history of nuclear deterrence suggests that all the nuclear-armed powers believe it works, and thus it is effective.[42] Chilton states that nuclear deterrence may even have positive effects against cyber-attacks, space attacks and transnational terrorism[43]; Yost argues that deterrence "tailored" to specific opponents, capabilities and communications has been

and can continue to be effective in the future even against rogue states, terrorist networks and near-peer competitors.[44] Others have argued that during the Cold War "nuclear learning" occurred, and that it is now taking place in many parts of the world, such as China, India, Pakistan, North Korea and even Iran, such that they all understand that a small number of nuclear weapons may be all that is necessary to deter an opponent.[45] These same authors later argued in favor of "minimum deterrence", that is, nuclear deterrence that only requires a small number of weapons. They state simply and eloquently: "If a small number of weapons can produce so much sobriety on our part, why do we need thousands?"[46]

The non-use of nuclear weapons gradually led to belief in a "nuclear taboo", also called the tradition of non-use of nuclear weapons; this concept was thoroughly addressed by T. V. Paul in his book *The Tradition of Non-Use of Nuclear Weapons*. [47] He notes that the tradition began in the mid-1960s because of the destructive power and reputational impact of nuclear weapon use. He strongly believes in the psychological nature of deterrence, stating that the threat did not deter, rather the belief in the threat is what deterred.[48] Possessing nuclear weapons can result in self-deterrence due to fear of consequences, damage to reputation, image prestige or power position, and general international standing; deterrence due to moral scruples, for example, is self-deterrence.[49] And he notes that the tradition is just that - a tradition - with no standing in international law or in any treaty. Many nations want to formalize the tradition in a treaty and give it the strength of international law, since it prevents nuclear war, avoids inadvertent escalations, reduces the proliferation of nuclear weapons, and reduces the value of nuclear weapons as a currency of power between nations.[50]

No discussion of nuclear deterrence is complete without considering the revisionist ideas of Ward Wilson. He reports that the Japanese did not contemplate surrender after 66 of their cities were incinerated during the summer bombing campaign in 1945: Hiroshima and Nagasaki were cities 67 and 68, and the level of destruction was not as great as that at Yokohama or Tokyo. Recently translated Japanese government documents show that the government did not respond to the atomic bombings, but considered surrender only when the Soviet Union declared war and initiated a blitzkrieg against Japanese forces in Manchuria. He argues that the evidence does not support that the United States strategic bombing campaign caused the Japanese surrender.[51] In a later paper he argues that nuclear deterrence is a myth for three reasons: first, city attack is not militarily effective; second, the psychology of terror actually creates a resistant enemy population, not a terrorized one; and third, there is no empirical evidence in favor of the effectiveness of nuclear deterrence. The evidence of history is that leaders do not value civilian populations.[52] More recently he co-authored a comprehensively researched publication which claims that nuclear deterrence is a risky strategy, with many accidents and near-misses, which promotes proliferation and has no historical basis.[53]

The literature on nuclear deterrence is vast, but it is sobering that after sixty-five years there is no consensus on how it works, or even if it works. Perhaps sixty-five years of nuclear non-use has indeed been just been a matter of luck.

<u>What nuclear threats must the US deter now and in the future</u>?

Some things do not change: the United States will continue to deter nuclear attack on the US and its allies by Russia, China, North Korea, and should it become a

nuclear-armed power, Iran. This type of deterrence, deterring a nuclear-armed nation state, seems to be well understood. The preceding discussion does raise the troubling prospect that the deterrence regime may be a sham. Should non-state groups such as Al Qaeda acquire nuclear weapons, it will be necessary to use deterrence in some form to prevent them from using them against the US.

Does nuclear deterrence work against terrorists?

In the aftermath of the 911 attacks, the fear that terrorist groups such as Al Qaeda would obtain and use nuclear weapons or other weapons of mass destruction reached fever pitch; the Department of Homeland Security was created largely to defend the homeland against terrorist attacks.[54] The National Defense University asked whether Al Qaeda could be deterred from using nuclear weapons; the conclusion was that Al Qaeda probably could be deterred by a variety of measures, including self-deterrence from realizing that a nuclear attack would incur global condemnation.[55] The practical impossibility of a non-state group fabricating a nuclear weapon means that an Al Qaeda weapon would have to be provided by a nation state, and the current state of nuclear forensics is adequate enough to create fear that a weapon donor would be identified and held accountable by an enraged United States.[56] These realities prompted some authors to minimize the risk of nuclear terrorism, while acknowledging that non-nuclear attacks by terrorists probably cannot be deterred.[57] Masse, for example, argues that nuclear terrorism is neither imminent nor inevitable, and that by many indicators nuclear weapons safety is at a historical high point. He explains that terrorist groups cannot build a nuclear weapon, and emerging nuclear powers are highly unlikely to give away such an important asset; on a cautionary note, he does mention that the security

of Pakistani nuclear weapons remains a grave concern.[58] Finlay and Turpen published a comprehensive program to re-invigorate the non-proliferation regime, re-new the American nuclear arsenal, and prevent nuclear terrorism, concluding that nuclear terrorism can be prevented.[59]

Knopf addressed the issue of deterring terrorist groups at length, using the concept of indirect deterrence as a way to influence third parties whose actions influence terrorist groups. He also believes that American actions in Iraq and Afghanistan have demonstrated America's capacity and resolute intention to visit destruction on its enemies. This strong response greatly enhanced American credibility, but he also suggests using other techniques such as deterrence by denial, by punishment, by public backlash (also known as deterrence by counter-narrative) and by threatening social targets valued by terrorist groups. He concludes that deterrence is relevant and useful against terrorist groups, even when used in indirect forms, and that deterring acquisition of weapons of mass destruction by terrorist groups will be harder than deterring their use.[60]

Finally, a Brookings paper concluded that general deterrence as part of a mix of strategies against non-state actors is likely to be at least partially effective, but notes that other strategies, such as incapacitating the terrorist group itself or controlling the supply of nuclear weapons materials are more likely to be useful in preventing a terrorist nuclear attack.[61]

Have the rules of nuclear deterrence changed?

The short answer to this question is no: nuclear deterrence still requires a nuclear capability and the credible intention to use it. But as the preceding discussion

makes clear, classical nuclear deterrence is designed to prevent the use of nuclear weapons by states that already have them. With all the caveats concerning the fragile state of general and nuclear deterrence, it still appears that nuclear deterrence may actually work; it is a matter of provable fact that no nuclear weapons have been used in anger since 1945. The goals of nuclear deterrence, however, have to be carefully circumscribed so that nuclear threats are not used promiscuously. Nuclear weapons are probably effective in deterring the use of nuclear weapons, but the threat of nuclear retaliation against less than existential threats lacks credibility - and credibility is an essential component of nuclear deterrence.

There has been much recent discussion whether the antiquated American nuclear arsenal remains a credible nuclear threat. The *Nuclear Posture Review Report* released in April 2010 updated the declaratory policy of the United States to reduce ambiguity and assure non-nuclear weapons states that are party to the Non-Proliferation Treaty that the US will not use or threaten use of nuclear weapons against them. The report also examined the status of the American nuclear arsenal and recommended measures to maintain a safe and reliable arsenal, but refused to limit the American nuclear force solely to responding to nuclear attack against the United States.[62] An Institute for Foreign Policy Analysis report also examined the US arsenal and nuclear operating concepts and concluded that the arsenal is safe and reliable, and more to the point, flexible enough to provide a credible nuclear deterrent.[63] Technical requirements for a credible nuclear deterrent force were explored by Kristensen, Norris and Oelrich, who concluded that current American nuclear warheads can easily be modified to provide low-yield results. This is crucial to maintain the credibility of the

nuclear arsenal since the Cold War legacy weapons are perceived as too large for credible use. In fact, they are easily adaptable to provide the small yields thought to be maximally deterring in the current environment.[64]

Conclusions

Several general conclusions can be drawn.

First, historical evidence that general deterrence prevents attacks is weak.

Second, deterrence is a complex and ambiguous process similar to religious belief. It is not a science and does not obey scientific rules.

Third, deterrence is relational and individual, resulting from one-to-one relationships between the deterrer and the deterred parties. What will deter one party may not deter another party, and what deters one party may change with time and circumstance. Successful deterrence requires profound knowledge about the opponent.

Fourth, in all likelihood, any nation state can be deterred from using Weapons of Mass Destruction against the US without invoking nuclear weapons, since current US conventional weapons are capable of inflicting massive economic damage to any nation state.

Fifth, in theory even a non-state group such as Al Qaeda could be deterred from launching a nuclear attack on the US. However, this requires the US to understand how the group thinks and what it holds dear. It also requires a relationship with the non-state actor to permit the deterrence conversation to occur. It is possible that only deterrence by denial can work against a non-state actor.

Sixth, nuclear weapons appear capable of deterring nuclear attack, but probably only nuclear attack.

Seventh, nuclear weapons do not prevent non-nuclear wars. American nuclear weapons did not prevent the Korean War, the North Vietnamese aggression against South Vietnam, or the smoldering war waged against the United States by Al Qaeda since the 1990s. In addition, Argentina attacked the Falkland Islands held by the nuclear-armed United Kingdom; the 1973 Arab-Israeli War was a surprise attack by non-nuclear Arab states against nuclear-armed Israel.

Eighth, nuclear deterrence may only work because all of the current nuclear weapons states are led by people who believe that it works.

Achieving nuclear deterrence in the 21st Century will be as difficult as it was in the 20th. The theoretical underpinnings of both general and nuclear deterrence are based on assumptions, and in the case of general deterrence, the historical record is filled with instances of unsuccessful deterrence. The absence of nuclear weapon use since 1945 cannot be unambiguously ascribed to the success of the nuclear deterrence regime. The rise of nuclear "rogue states" like North Korea and Iran raises questions about whether they, or non-state actors such as Al Qaeda can be deterred successfully. But with continual vigilance, a nuclear arsenal that is both credible and therefore potentially usable, and with a widely broadcast and sincerely meant intention to use that arsenal if need be to protect the United States, nuclear deterrence may indeed be achieved.

Endnotes

[1] Francis Fukuyama, "The End of History", *The National Interest*, Summer 1989

[2] Yehoshafat Harkabi, *Nuclear War and Nuclear Peace* (New Brunswick, NJ: Transaction Publishers, 2008, originally published in Hebrew in 1966), 5

[3] U. S. Joint Chiefs of Staff, *Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: U.S. Joint Chiefs of Staff, 12 April 2001 As Amended Through April 2010), 139

[4] Ibid., 139

[5] Robert B. Strassler, ed. *The Landmark Thucydides* (New York: Free Press, 1996), 43

[6] Joseph S. Nye, Jr. *Nuclear Ethics* (New York: Free Press, 1986), 74

[7] Harkabi, *Nuclear War and Nuclear Peace*, 1

[8] Ibid., 2

[9] Ibid., 9

[10] Ibid., 13

[11] Ibid., 24

[12] Raoul Naroll, Vern L. Bullough, and Frada Naroll, *Military Deterrence in History: A Pilot Cross-Historical Study* (Albany, NY: State University of New York Press, 1974)

[13] John J. Mearsheimer, *Conventional Deterrence* (Ithaca, NY: Cornell University Press, 1983)

[14] Huth, P. and B. Russett, "General Deterrence Between Enduring Rivals: Testing Three Competing Models", *American Political Science Review* 87,1 (1993):61-73

[15] Colin S. Gray, *Defining and Achieving Decisive Victory*, Strategic Studies Institute Monograph, (US Army War College, Carlisle PA, April 2002), 31

[16] Colin S. Gray), *Maintaining Effective Deterrence*, Strategic Studies Institute Monograph, (US Army War College, Carlisle PA, August 2003),v

[17] Ibid., 25

[18] Ibid., 30

[19] Lawrence Freedman, *Deterrence* (Malden, MA: Polity Press, 2004), 29

[20] Ibid., 124

[21] Colin S. Gray, “Gaining Compliance: The Theory of Deterrence and its Modern Application”, *Comparative Strategy*, 29, no.3, (2010) 278-283

[22] Jeffrey Record, “Nuclear Deterrence, Preventive War, and Counterproliferation”, *Policy Analysis*, No 519, July 8, 2004

[23] Bernard Brodie, *The Absolute Weapon: Atomic Power and World Order* (New York: Harcourt, Brace and Co., 1946)

[24] Henry A. Kissinger, *Nuclear Weapons and Foreign Policy* (New York, NY: Harper and Row, 1957)

[25] Herman Kahn, *On Thermonuclear War*, (New Brunswick, NJ: Transaction Publishing, 2007, originally published in 1960 by Princeton University Press)

[26] Herman Kahn, *Thinking About the Unthinkable in the 1980s*, (New York, NY: Simon and Schuster, 1984)

[27] Herman Kahn, *The Nature and Feasibility of War And Deterrence*, RAND Corporation Paper P-1888-RC, January 20, 1960 (The RAND Corporation, Santa Monica CA)

[28] Lawrence Freedman, *Two Generations of Nuclear Strategists*, Chapter 25 in *Makers of Modern Strategy*, Edited by Peter Paret (Princeton NJ: Princeton University Press, 1986), 765-766

[29] Philip Green, *Deadly Logic* (Columbus, OH: Ohio State University Press, 1966)

[30] Joseph S. Nye, Jr*. Nuclear Ethics*, (New York, NY: the Free Press, 1986)

[31] Ibid., 735

[32] Ibid., 738

[33] Ibid., 746

[34] Ibid., 757

[35] Ariel E. Levite "Heading for the Fourth Nuclear Age" *Ifri Security Studies Center Proliferation Paper* No. 24, Winter 2009 (accessed 18 February 2011, http://carnegieendowment.org/files/Levite_Fourth_Nuclear_Age.pdf), 11

[36] Ibid., 15

[37] Ibid., 23

[38] Jeffrey W. Knopf, "The Fourth Wave in Deterrence Research", *Contemporary Security Policy,* Vol 31, no 1 (April 2010) 1-33

[39] Ibid., 1

[40] Record, "Nuclear Deterrence, Preventive War and Counterproliferation", 25

[41] Godfried van Bentham van den Bergh, "The Taming of the Great Nuclear Powers", *Policy Outlook,* No. 46, May 2009

[42] Keith B. Payne, "On Nuclear Deterrence and Assurance", *Strategic Studies Quarterly*, Spring 2009, 43-80

[43] Kevin Chilton, "Waging Deterrence in the Twenty-First Century", *Strategic Studies Quarterly*, Spring 2009, 31-42

[44] David S. Yost, “NATO and Tailored Deterrence: Key Workshop Findings in 2007-2008” *Strategic Insights*, Volume 8 issue 4, September 2009

[45] James Wood Forsyth, B. Chance Saltzman, and Gary Schaub, Jr., “Remembrance of Things Past” *Strategic Studies Quarterly*, Spring 2010, 74-89

[46] James Wood Forsyth, B. Chance Saltzman, and Gary Schaub, Jr.,”Minimum Deterrence and its Critics”, *Strategic Studies Quarterly*, Winter 2010,

[47] T. V. Paul, *The Tradition of Non-Use of Nuclear Weapons*, (Stanford, CA: Stanford University Press, 2009)

[48] Ibid., 202

[49] Ibid., 203

[50] Ibid., 213

[51] Ward Wilson, “The Winning Weapon? Rethinking Nuclear Weapons in Light of Hiroshima”, *International Security*, Vol 31, No. 4 Spring 2007, 162-179

[52] Ward Wilson, “The Myth of Nuclear Deterrence”, *Nonproliferation Review*, Vol 15, No. 3, November 2008, 421-439

[53] Ken Berry, Patricia Lewis, Benoit Pelopidas, Nikolai Sokov and Ward Wilson, *Delegitimizing Nuclear Weapons: Examining the validity of nuclear deterrence*, Monterey Institute of International Studies Monograph, May 2010

[54] Department of Homeland Security Strategic Security Plan, September 16, 2008

[55] Lewis A. Dunn, *Can Al Qaeda Be Deterred from Using Nuclear Weapons*? Occasional Paper, Center for the Study of Weapons of Mass Destruction, (Washington, DC: National Defense University Press, July 2005)

[56] Caitlin Talmage, “Deterring a Nuclear 911”, *The Washington Quarterly*, Spring 2007, Vol 30, no. 2, pp 31-34

[57] Adam Garfinkle,” Does Nuclear Deterrence Apply in the Age of Terrorism?” *Foreign Policy Research Institute Newsletter*, Vol 14, No. 10, May 2009

[58] Todd Masse, “Nuclear Terrorism Redux: Conventionalists, Skeptics, and the Margin of Safety”, *Orbis* Vol 54, No. 2, Spring 2010, 302-319

[59] Brian D. Finlay and Elizabeth Turpen, *25 Steps to Prevent Nuclear Terror: A Guide for Policymakers*, (Washington, DC: The Henry L. Stimson Center, January 2007),

[60] Jeffrey W. Knopf, “The Fourth Wave in Deterrence Research”, 9-27

[61] Steven Pifer, Richard C. Bush, Vanda Felbab-Brown, Martin S. Indyk, Michael O'Hanlon, and Kenneth M. Pollack, U.S. Nuclear and Extended Deterrence: Considerations and Challenges, Brookings Arms Control Series Paper 3, May 2010,

[62] Nuclear Posture Review Report, April 2010, US Department of Defense

[63] Jacquelyn K. Davis, Robert L. Pfaltzgraff, Jr., Charles M. Perry and James L. Schoff, Updating U.S. Deterrence Concepts and Operational Planning, Institute for Foreign Policy Analysis White Paper, February 2009

[64] Hans M. Kristensen, Robert S. Norris, and Ivan Oelrich, *From Counterforce to Minimal Deterrence: A New Nuclear Policy on the Path Toward Eliminating Nuclear Weapons*, Occasional Paper No. 7, April 2009, Federation of American Scientists and The Natural Resources Defense Council